

in all meteorological work. World meteorology has always suffered from lack of homogeneity due to national lines of division; that gigantic undertaking of the 70's and 80's the "International simultaneous observations" under the direction of Gen. A. J. Myer, was not altogether perfect in this regard. Even within the limits of a nation observations will not be uniform and comparable unless under a centralized control. It is not often that the United States passes through a phase of national development earlier than does Great Britain; but in this case we actually seem to have done so. Our country has had its experience with State and other local weather organizations with the result that local pride or local interests did not prove strong enough to maintain the work in adequate form, with one or two noteworthy exceptions.

Strange to say, it may be safely opined that Dr. Shaw's appeal would not find any response in the American public consciousness. Here we seem to lean more and more strongly toward governmental financing of all undertakings, no matter how pronounced their local value and bearing. Of course, in certain lines, such as metropolitan rainfall réseaux, local corporations have shown initiative and energy of their own; but they seem to have been forced into such work by Dame Nature rather than to have undertaken it from any sense of pride in securing a knowledge of their locality.—C. A., jr.

**MEMORANDUM BY THE DIRECTOR OF THE METEOROLOGICAL OFFICE.<sup>1</sup>**

[Signed: W. N. SHAW, London, Apr. 27, 1915.]

In the present emergency in national affairs the Meteorological Committee desires to call attention to the position of the Meteorological Office in relation to the collection of observations from what are technically known as "climatological stations;" that is to say, from stations which are maintained, not by the office in connection with the public daily service of forecasts and gale warnings, but by local authorities or private persons. They contribute observations to be used by meteorologists for the study of the details of climate and weather in the British Isles, and by the public who require information about the weather for various purposes.

The Meteorological Office is a central depository of transcripts of meteorological observations of various kinds in every part of the British Isles, of the British Empire, and indeed of the whole world, not because the information is essentially necessary for or immediately applicable to the work of forecasting and the study of daily weather which, so far as observations on land are concerned, are its primary duties, but because an organized central storehouse or memory of the experiences of weather for a long series of years is of great public utility and more effective than any compilation which otherwise individuals would be able to make for their own use. By agreement between the office and the Scottish Meteorological Society the Meteorological Office, Edinburgh, discharges a similar duty with special reference to Scotland.

In the course of the past 20 years a large amount of valuable information has been compiled, the existence of which is hardly realized. It is still far from complete, but I may be permitted to illustrate the usefulness, or at least the appositeness, of an efficient public memory by recalling a report which I happened to see some years

ago in the Westminster Gazette, of a lawsuit in which a tobacconist sued his neighbor for damage to a case of cigarettes, alleged to be due to rain coming through a broken skylight. It was acknowledged that the skylight was broken by the neighbor's son and, according to the report, "all went well until a mild-mannered gentleman from the Meteorological Office" proved that it had not rained since the skylight was broken, and the plaintiff's case had to be abandoned.

In order to be effective the collection of information should be carefully organized. The preservation of a trustworthy and sufficient memory of past weather is primarily a matter of urgent local importance. The weather is an element in the profit and loss account of every individual, of every parish, of every district, whether urban or rural, of every county, and of every State; and the preservation of an efficient record of these events is just as important for the persons or authorities concerned as the record of the money transactions in which they are engaged. The difference between the two sets of experiences is that one is beyond the control of the individual or local authority and the other is not; but no steward of his own or other people's interests would be regarded as wise if he left out of account the gains and losses which he could not control.

The question of meteorological observations, or weather records, may be put in this general form: Here is a spell of rain which the house gutters, the local drains, the roads, gulleys, and streams have to carry away; a snow-storm which may make the neighborhood impassable; a hailstorm which damages the crops; a drought, or a long frost, which endangers the water supply; a wind which brings down all the loose tiles and chimneys. Are these events to be regarded as normal and to be provided against by suitable precautions, or are they outstanding risks which should be left to chance?

Only by an adequate public memory can an answer be given, and hitherto the provision of the material for an answer has been left mostly to private enterprise. The claims of science have usually been urged as an encouragement to private enterprise, and without doubt such observations are indispensable for the scientific study of weather; but they are equally indispensable for the proper conduct of the ordinary affairs of life. Since the study of weather began to be organized on a scientific basis, circumstances have changed. The life of the individual and of the community is not nearly so self-contained now as it used to be; it is much more dependent upon facilities for communication with the rest of the world. The increase of those facilities enables the experience of many to be used for the advantage of each in a far greater degree than was possible in the olden days.

To take an example, the practice of insurance is far more widely spread than it used to be. Taking the case of insurance against hail, the premium should be different according to the locality; but so far as is known the localities in their corporate capacity keep no records, and in consequence the premium is fixed for them upon information privately compiled by the insurance companies; that is to say, by one of the parties to the bargain. Many other forms of insurance against weather are possible, but only when the risk can be properly computed by means of ascertained facts. This Office has recently been concerned in a legal dispute as to whether damage to property during a squall of wind accompanied by incessant lightning was directly due to the wind or to the lightning. A fine distinction, upon which the validity of the insurance turned, and which suggests some revision

<sup>1</sup> Reprinted from Tenth Annual Report of the Meteorological Committee . . . for the year ended March 31, 1915 (the 60th year of the Meteorological Office). London, 1915. pp. 75-78.

of the practice of insurance in the light of recorded experience of weather.

Local authorities have given little consideration to these matters, and individual farmers and others have trusted to their own reminiscences. It is, in fact, apparent that the balance of prosperity has been so large that it has not hitherto been felt necessary to pay much attention to the profits to be made out of the weather, or to economize the losses which it causes, but when the pinch of adversity comes, as it must come after the squandering of so much of the world's wealth in the war, the reduction of any risk by the use of organized knowledge is at least worthy of consideration. The stress of war is therefore a reason for organizing the study of weather, not a reason for postponing organization to a more prosperous season.

No one will deny that a careful record of the weather regularly compiled from day to day on a definite plan is, in the long run, a better basis of action than the longest stretch of personal reminiscences, just as a daily record of river level is better than an occasional mark on the parapet of a bridge. With the change of circumstances, from the comparative independence of the homestead to mutual dependence of town and country, and from the abundant prosperity of past years to the adversity that lies in front of us in the near future, the preservation of an adequate record of the events of weather for comparison with past times and with other localities has also changed from being a matter of scientific and personal curiosity to a necessity for the community. It is from that point of view that it should be regarded; the additional advantage that may accrue from scientific meteorological study is all to the good, but it is another matter.

The unanimity with which the health resorts have made provision for careful records of weather shows that a knowledge of the weather must be looked upon as a valuable asset, and it is equally so for any other locality. A contractor who undertakes work for a local authority must either know something about the weather or allow a wider margin for contingencies than is really necessary; the locality must either supply the information or provide the margin.

Hitherto the observations upon which we depend for supplying information about the weather in all parts of the British Isles have been largely those of country clergy and landowners; but the drain upon their resources, particularly in men, has begun to diminish the number of observations available. Already in Ireland the observations are altogether inadequate, and when, for example, questions are put as to the parts of the country where climatic conditions are favorable for afforestation, we can not give a satisfactory answer, because the localities have no record of their experience. Moreover, the distribution of observing stations depends not upon the present and future requirements of the public but upon the existence of a local volunteer.

It is submitted, therefore, that the local authorities should give serious consideration to the question of an adequate record of weather. The Meteorological Office has been active in collecting and organizing the meteorological information that was known to be available. This has given the impression that the office, as the creation of the central Government, ought itself to provide any observations that may be found necessary for any purpose whatever; but such an impression is quite erroneous. Out of 500 observatories and stations which contribute observations to the office for the

benefit of the public, only 36 are maintained or subsidized out of office funds. A considerable number are maintained by local or statutory authorities and the remainder by private persons at their own expense. It is natural, and perhaps laudable, that in the matter of weather the city of Westminster should rely upon the Meteorological Office, instead of itself, for its memory; and it is not unreasonable that the office of works, in a dispute over a contract, should apply to the Office (unsuccessfully, I fear) for details of weather between Avonmouth and Bristol, and their relation to the average. But it would be absurd, for example, for the Council of the County of Warwick to rely upon London to know what weather had been experienced in Warwickshire; or for residents at Hindhead to live in ignorance of their own climatic conditions until the Government provides the information. The natural order is just the reverse; the Meteorological Office should naturally appeal to the localities to know what has transpired [happened] there, and it is a matter for surprise how many of the county councils, when appealed to, would be unable to say what the weather had been in their county since it was under their charge. The whole situation arises from the mistaken notion that to satisfy the condition of utility at all, knowledge must be useful here and now, and that nothing need be preserved for which the officials of to-day have no obvious and immediate use. It is the memory which goes back longest that is the most effective, and therefore most useful.

It ought, in fact, to be the function of the Meteorological Office to reduce, rather than to multiply, meteorological observations, by proper organization and by the suggestion of coordination, where coordination is economical. The following guiding principles seem to be applicable: For keeping its water supply and drainage properly under observation, every parish ought to have its raingage and the parish council might see to that. A district council might keep a regular record of temperature and weather as well, for its own district; while in every county there should be, for official purposes, a proper number, and no more, of fully equipped climatological stations which should be centers of information about the weather and its ways for all concerned.

#### THE TROPICAL HURRICANE OF SEPTEMBER 29, 1915, IN LOUISIANA.

By ISAAC M. CLINE, District Forecaster.

[Dated: Weather Bureau, New Orleans, La., Oct. 21, 1915.]

The most intense hurricane of which we have record in history of the Mexican Gulf coast, and probably in the United States, moved northward over southeastern Louisiana and southwestern Mississippi during September 29, 1915. The territory traversed by this hurricane, especially near its center, is well covered by cooperative observing stations, and the records of meteorological conditions from these stations furnish unusually interesting material for study in connection with hurricanes. We have very complete barometer readings from New Orleans, Burrwood, and Morgan City, La., and Bay St. Louis, Miss., and observations of weather conditions and changes in wind direction on and near the path of the center of the hurricane from the time it struck the Louisiana coast until it passed out of the State, a distance of about 150 miles.